Business and Technical Interoperability through NMCI

Common access methodology, common available data, centralized standardized services, these are the pillars of the NMCI architecture. Reducing redundant applications and databases, making applications smaller in scope and re-utilizing common frameworks is the key to rapid and successful integration of Navy applications to NMCI.

We believe that NMCI can continue to evolve rapidly by further integrating applications using web services. We also believe that utilizing common services frameworks for security, auditing, reporting and other services can result in quicker implementations and a more coherent environment.

Common frameworks identify specific functions that need to be addressed in order to achieve decentralized interoperability. They do not determine the particular technologies used to fulfill the functions but rather divide the problem space into sub-problems with specified relationships. Such functional decomposition allows differing solutions to sub-problems without overlaps, conflicts or omitted functionality. This is not to say that all applications must offer the same facilities, rather that when a feature is offered it should fit into a common framework and preferably have a standard expression.

Without a common framework and coordinated development of each component, one almost certainly produces overlaps, which are likely to make implementations more complex and decrease the probability of achieving interoperability. Lacking a common framework also forces developers to guess how various components work in concert. This guessing leads to poor interoperability and fragility. A common framework approach allows the development and adoption of the individual components to happen in parallel and asynchronously, which has the added benefit of enabling critical pieces to be completed sooner than others, thereby allowing implementations to proceed. As new components or modules are completed, they can be applied later, as desired. It is crucial that these mechanisms remain orthogonal so they can evolve without having to change the whole system. Finally, a framework approach supports selections of subsets of components to provide specific levels of service that scenarios require.

The Navy aims at connecting applications. Such applications will be built in a variety of programming languages, using a range of operating systems, database, and middleware technologies. The interoperability we seek can only be achieved when based on standard data formats and protocols, not APIs. By focusing "on the wire", we define just the specifications needed for interconnection. We believe this approach provides the greatest benefit in the shortest time, and does not impinge of software vendors' flexibility and enterprise autonomy.

This white paper discusses this approach and offers specific guidelines of technical and economic nature for the evolution of NMCI utilizing a common services framework approach.

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